DOCUMENT RESUME

ED 188 019 CE 025 886

TITLE Project CHOICE: #167. A Career Education Unit for Grades K-2. Measurement. (Science and Engineering Occupations Career Cluster).
INSTITUTION Kern County Superintendent of Schools, Bakersfield, Calif.
SPONS AGENCY Office of Education (DHEW), Washington, D.C.
PUB DATE Mar 78
NOTE 43p.; For related documents see CE 025 584-585, CE 025 587, CE 025 590-596, CE 025 599-600, CE 025 603, CE 025 605, CE 025 607, CE 025 609, CE 025 738-789, CE 025 870, CE 025 872, CE 025 880-881, CE 025 883, and CE 025 885-893.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Career Awareness; Career Development; *Career Education; Educational Resources; Elementary Education; Grade 1; Grade 2; Instructional Materials; Learning Activities; Lesson Plans; *Measurement; Measurement Techniques; Occupational Clusters; Occupations; Teaching Guides; Units of Study
IDENTIFIERS Project CHOICE

ABSTRACT

This teaching unit on measurement is part of the Science and Engineering Occupations Career Cluster included in a series of career guidebooks developed by Project CHOICE (Children Have Options in Career Education). The units are designed to provide the classroom teacher with a source of career-related activities linking first and second grade classroom experiences with the world of work. Each unit follows a typical format that includes the rationale for the unit, goals, performance objectives, entry Level assessment, suggested instructional materials (including books, films, and filmstrips), and instructional strategy. The instructional strategy section contains ten lessons designed to help students develop an awareness of the need for measurement and develop measuring skills. Each lesson is comprised of the following sections: purpose, materials, introduction, class activities, and summary activity. Task cards are appended. (This guide is one of fourteen in the series for grades 1 and 2.) (LRA)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

OFFICE OF CLAUDE W. RICHARDSON
KERN COUNTY SUPERINTENDENT OF SCHOOLS

ED188019

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Project CHOICE
#187

A CAREER EDUCATION UNIT FOR GRADES K-2

MEASUREMENT

(Science and Engineering Occupations Career Cluster)

2

March, 1978

FOREWORD

Project CHOICE: Children Have Options in Career Education, is an Exemplary Project from the San Diego City School District, which has been adapted, with ESEA Title IV-C funding, for Kern County Schools.

Through Project CHOICE, units have been developed to provide the classroom teacher with a source of career-related activities linking classroom experiences with the world of work. All students, regardless of their post-high school plans, share an equal need for career awareness, decision making skills, and other elements of career education. This goal can be accomplished if all teachers and counselors "fit" the appropriate units where they best apply in the curriculum.

We are indebted to the San Diego City School District, and the Project CHOICE staff, for developing and field testing the original units.

For their excellent work in re-writing the units in order to adapt them for use in Kern County Schools, we wish to recognize:

Patricia Alexander
Kernville Union School District
Robin Cole
Standard School District
Carol Hatcher
Beardsley School District
James Murphy
Greenfield Union School District
Dan Sawyer
Tehachapi Unified School District
Sharon Shires
Rio Bravo - Greely Union School District
Cynthia Silliman
Richland School District

Janet S Wells

Janet Wells
Career Education Resource Teacher
Guidance Services

Science and Engineering Occupations
Career Cluster

MEASUREMENT

CONTENTS

	Page
FOREWORD	i
RATIONALE	1
GOALS AND PERFORMANCE OBJECTIVES	1
ENTRY LEVEL ASSESSMENT	2
EVALUATION	2
USE OF TASK CARDS AND FIELD TRIPS	2
SUGGESTED INSTRUCTIONAL MATERIALS	3
COMMUNITY RESOURCES	4
INSTRUCTIONAL STRATEGY: LESSONS 1-10	5
TASK CARDS 1 through 21	17

Science and Engineering Occupations Career Cluster

MEASUREMENT

TEACHERS' GUIDE

RATIONALE

Measurement of time, money, weight, length is a necessary ingredient in any career. To be included in this unit are concrete activities that give meaning to the terms that stand for weight and length. The students will gain an awareness and need for measurement and develop measuring skills.

GOALS

Through this unit, the students will gain knowledge about:

- Weight measurement and the terms heavy and light.
- Measuring articles to determine which is lightest or heaviest, and ordering from light to heavy.
- How weight measurement is used.
- Length measurement and the terms shortest and longest/tallest.
- Measuring articles to determine the length and ordering from shortest to longest/tallest.
- How length measurement is used.
- Various kinds of tools for measurement.
- Uses of measurement in the World of Work.

PERFORMANCE OBJECTIVES

The students will be able to:

- Show or describe which of two articles is the lightest.
- Show or describe which of two objects is the heaviest.
- Order in sequence 3 articles from light to heavy.
- Describe or show which of two articles is the shortest.
- Describe or show which of two articles is the longest/tallest.
- Order in sequence 3 articles from short to long/tall.
- Tell or draw a picture that shows how weight measurement is used.

-Tell or draw a picture that shows how length measurement is used.

-Describe some tools that are used for measurement.

-Describe how one job uses measurement.

ENTRY LEVEL ASSESSMENT

Use this informal inventory to determine the class awareness of measurement:

1. Name an object heavier than an apple.
2. Name an object lighter than a box of cereal.
3. Tell about someone who works who needs to know how heavy something is.
4. Name an object shorter than a telephone pole.
5. Name an object longer than a pencil.
6. Tell about someone who works who has to know how to measure objects.
7. What are some tools that you use to measure?

EVALUATION

The final lesson has been set aside for evaluation. The Entry Level Assessment may be used as a pretest as well as a post test, or the teacher may wish to develop his/her own. Responses may be taped or written, so that comparisons may be made in order to determine how well pupils have achieved the objectives.

USE OF TASK CARDS

The use of the task cards would be greatly facilitated by parent volunteers, cross-age tutors, student teachers or teacher assistants. The size of groups doing the given tasks will depend on class make up, room arrangement and the facilities at your location. It is not the intention that all task cards be completed by every student. In some instances total group activities of one task card would satisfy the purpose.

Many of the task cards in this unit are meant to be on-going activities. Estimation and probability are exciting extensions of learning and natural for any Pre-K or K who has grasped the terms.

FIELD TRIPS

Two lessons in this unit are field trips. Permission slips should be sent home and arrangements made in advance of starting the unit for the field trips.

Resource persons could be substituted for field trips. This also should be done in advance.

SUGGESTED INSTRUCTIONAL MATERIALS

The following materials and equipment may be used in this unit:

- Films and filmstrips, as listed.
- Books as listed.
- Musical bells.
- A variety of measuring devices.
- Task cards.
- Film projector and filmstrip projector.

Films:

Big and Little
How Far?
Comparing: Getting Ready to Measure.

Filmstrips:

Measuring for Much
Measuring How Long
Comparing Sizes
What One-Half Means

Books:

Title	Author
How Big Is A Stick?	Podendorf
Measurement: How Much? How Many? How Far?	Luce
What Is An Inch?	Klein
Inch by Inch	Lionni
How Big Is A Foot?	Myller

This Is Music (often a part of the Kindergarten curriculum)

AVAILABLE IN INSTRUCTIONAL RESOURCE CENTER: OFFICE OF THE KERN COUNTY SUPERINTENDENT OF SCHOOLS
(Please preview first, to be certain of suitability for specific students and situations.)

Films:

MP 2168	How Long Is A Minute?
MP 4735	Measuring - A Way Of Comparing
MP 5454	What Time Is It?
MP 4696	How Little? How Big?

Filmstrips:

FK 4736	Measuring Length
FK 4738	Measuring Liquids
FK 4740	Measuring Time With A Calendar
FK 4741	Measuring Time With A Clock
FK 4742	Measuring Weight

COMMUNITY RESOURCES

The following persons may be used as resources in this unit:

- School workers (cooks, custodians, aides.)
- Parents.
- Community workers.

INSTRUCTIONAL STRATEGY: LESSONS 1-10

Lesson 1

PURPOSE — To gain an awareness of terms used in measurement.

MATERIALS

1. Entry Level Assessment.
2. Tape recorder.
3. Suggested film: How Little? How Big?, #4696 (available through Instructional Resource Center, Kern County Superintendent of Schools Office)
4. Film projector.
5. Task cards 1, 2, and 3.

INTRODUCTION — Administer Entry Level Assessment. Say: "Today we are going to see a film which has some words that help us to describe the size of objects and things."

CLASS ACTIVITIES

1. Show film.
2. Recall the terms in the film. Let the children describe the object or things used in the film that demonstrated the terms.
3. Do task cards.

SUMMARY — Select children from each group to describe their activities.

Lesson 2

PURPOSE

To establish understanding of terms heavy/light. To give experiences in activities that measure objects that are heavier or lighter than other objects.

MATERIALS

1. Suggested film: Measuring - A Way Of Comparing, #4735, (Available through Instructional Resource Center, Kern County Superintendent of Schools Office)
2. Film projector.
3. 1 cup of sand in a container.
4. 1 cup of finely cut paper in a container.
5. Task cards 4, 5, and 6.

INTRODUCTION

Say: "Today we are going to measure things that are heavy and light." Invite a child to hold the cup of sand in one hand, in the other the paper. Say: "Please hold the cup that is heavier near your feet, hold the cup that is lighter higher." Let several children use their bodies as fulcrums with these materials. Encourage them to tell you which one is lower (heavier), which one is higher (lighter.) In letting them use their bodies as fulcrums, you are preparing them for work with a pan balance.

CLASS ACTIVITIES

1. View and discuss film.
2. Discuss tasks used in doing activities.
3. Do task cards.

SUMMARY

Review terms: heavy and light.

Lesson 3

PURPOSE

To give children experiences in activities that measure articles heavy to light. To order objects from small to large.

MATERIALS

1. Task Cards 7, 8, and 9.
2. Flannel board.
3. Flannel balloons, see next page.

INTRODUCTION

Scatter randomly the flannel balloons. Say: "Who would like to put the smallest on the left side of the flannel board?" Have them put in sequence from small to largest. Have them read with you left to right (the color too.)

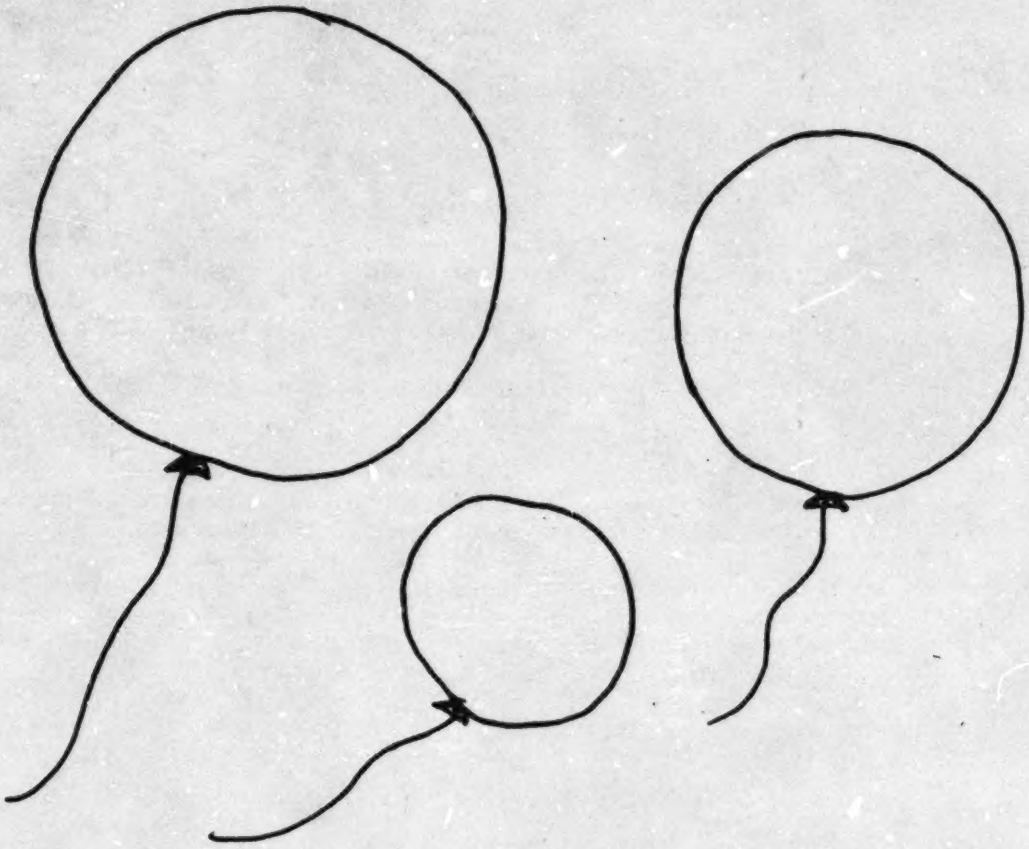
CLASS ACTIVITIES

1. Do activity with flannel board and balloons.
2. Do task cards.
3. Introduce pan balance. Use teacher collected articles to demonstrate use to the whole class.

SUMMARY

Select children to summarize the results of their task cards.

PATTERN FOR FLANNEL BOARD BALLOONS



You need:

1. Construction paper, 3 different colors with little squares of flannel or sandpaper glued on back,

<u>or</u> felt in three different colors.

2. Small piece of yarn stapled on each balloon.

Lesson 4

PURPOSE To see how weight measurement is used in the World of Work.

MATERIALS

1. Field trip arrangement*
   (Note: A resource person could be substituted.)
2. Task Card 10, to be used as a guide for field trip.

INTRODUCTION Say: "Today we are going to see some workers who have to weigh things at their job."

CLASS ACTIVITIES

1. Go over items on task card.
2. Take the field trip (or hear the resource person.)

SUMMARY Review the task card information.

*Field trip suggestions:

- supermarket
- corner store
- produce shop
- meat market
- pet store
- feed store
- van and storage

Lesson 5

PURPOSE

To establish understanding of terms tallest or shortest, longest or shortest. To give experience in activities that measure length.

MATERIALS

1. Suggested filmstrip: Measuring Length, #FK 4736, (Available through Instructional Resource Center, Kern County Superintendent of Schools Office)
2. Filmstrip projector.
3. Task Cards 11, 12, 13, and 14.
4. Flannel board.
5. Yarn, 2 lengths.
6. Pencils, 2 different lengths.

INTRODUCTION

Say: "Today we are going to measure things but first we will have to know by looking what is longest or shortest, tallest or shortest."

CLASS ACTIVITIES

1. Use the flannel board with the yarn and pencils to ask the children to name the terms. Display them horizontally and vertically and side by side.
2. Show and discuss filmstrip.
3. Do task cards.

SUMMARY

Recall filmstrip and review terms tall/short, long/short. Select children to share their tasks.

Lesson 6 (Optional Lesson)

PURPOSE

To give the children experiences in measuring length.

MATERIALS

1. Book (if available): This Is Music. Song: "My Rocket Ship", page 67.
2. Instruments: bells.
3. Task cards 15, 16, and 17.

INTRODUCTION

Say: "We are going to learn a song about a rocket ship and countdown like the song suggests to Blast Off for some measurement."

CLASS ACTIVITIES

1. Teach "My Rocket Ship." Add bells at the end. Ask a child to play the bells as we count to 10. Ask another child to play the bells as we count to 5. Ask which time the bells were played the longest, which time the shortest.
2. Do task cards.

SUMMARY

Let children share the results of their task cards. Encourage use of the measuring vocabulary we have been using.

Lesson 7 (Optional Lesson)

PURPOSE To give the children experiences in measuring length and ordering them from shortest to longest/tallest.

MATERIALS

1. Song: "My Rocket Ship," from Lesson 6.
2. Instruments: bells.
3. Task Cards 18, 19, 20.
4. 3 blocks; small, medium, long.

INTRODUCTION Sing, "My Rocket Ship." Say: "Let's blast off today for measuring."

CLASS ACTIVITIES

1. Use the 3 blocks. Select children to help you order them from short to long vertically, and from short to tall horizontally.
2. Order other classroom items according to tall and short.
3. Do task cards.

SUMMARY Invite children from the different activities to share their results with you and their friends.

Lesson 8

PURPOSE To see how length measurement is used in the World of Work.

MATERIALS

1. Field trip arrangements.*
   (Note: A resource person could be substituted.)
2. Task Card 21, to be used as a guide for field trip.

INTRODUCTION Say: "Today we are going to see some workers who have to measure the length of things on their job."

CLASS ACTIVITIES

1. Go over items on task card.
2. Take the field trip (or hear the resource person.)

SUMMARY Review the task card information.

*Field trip suggestions:

- fabric store
- lumber company
- drape shop
- carpenter
- carpet store

Lesson 9

PURPOSE

To make the children aware of tools that are used for measurement. To encourage investigation.

MATERIALS

1. Yardstick, measuring tape, foot ruler.
2. Cup, pint, quart, gallon measures.
3. Money: coins, bills (this can be play money.)
4. Maps, globes.
5. Calendars.
6. Thermometers.
7. Clocks, clock faces, puzzles.
8. Measuring spoons.
9. Bathroom scales, balancing scales.
10. Suggested film: What Time Is It?, #5454
    (Available through Instructional Resource Center, Kern County Superintendent of Schools Office)

INTRODUCTION

Say: "This collection is of tools we use in our lives to measure."

CLASS ACTIVITIES

1. Talk about just one of the tools today. Hold up the clock and ask "What does this measure?"
   Ask: "What time does your father go to work?"
   "What time do you come to school?"
   "How do you know when your dentist appointment is?"
   "Is it important that we know about time? Why?"
2. Let children examine the tools. This should be an on-going activity for a math center.
3. View film.

SUMMARY

These tools will be in our math center to investigate and work with. We will talk about how all of them are important to us.

Lesson 10

PURPOSE To enable students to assess their knowledge of measurement.

MATERIALS

1. Tape recorder.
2. Tape from pre-test.
3. Entry Level Assessment.
4. All task cards from unit.

INTRODUCTION Say: "Today we will find out how much we've learned about measurement. Let's listen to the tape we made before we started talking about measurement. Let's find out how much more we know now."

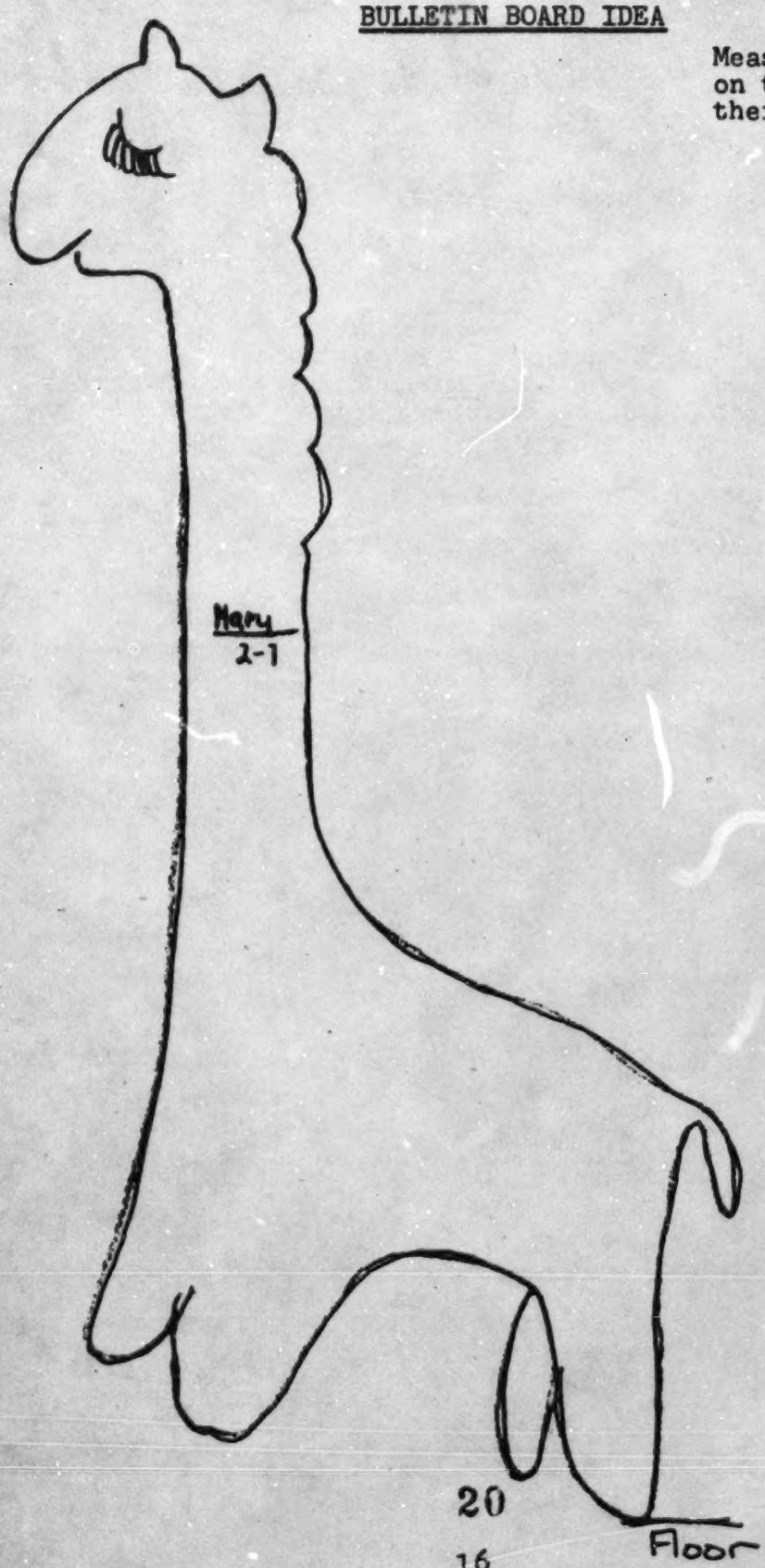
CLASS ACTIVITIES

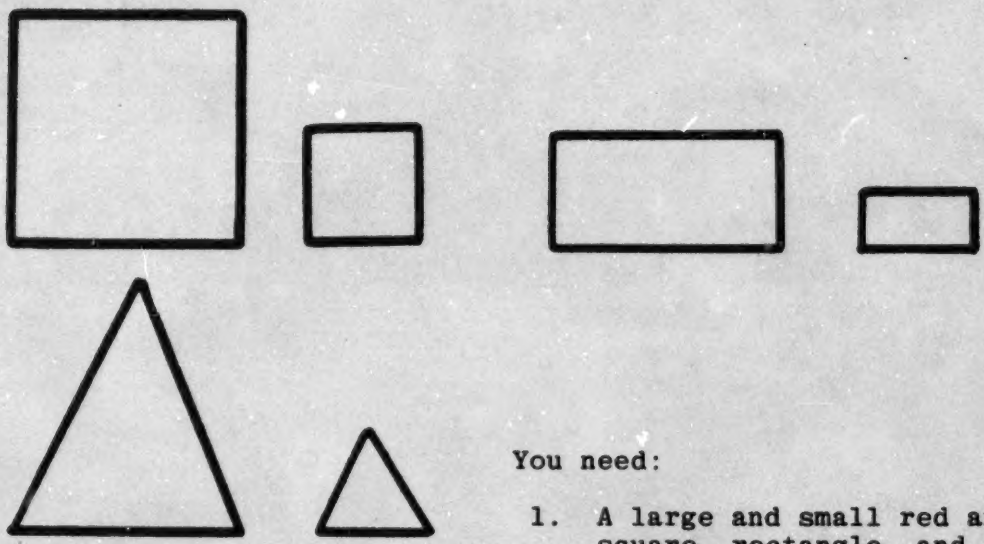
1. Listen to pre-test tape.
2. Make a new tape as a post test.
3. Free use of all task cards.

SUMMARY Let the children comment about what they have learned and which task cards they particularly liked or disliked.

BULLETIN BOARD IDEA

Measure the children on the giraffe. Put their name and date.





You need:

1. A large and small red and green square, rectangle, and triangle for each child cut from construction paper.
2. Envelope to put shapes in.
3. Leader.

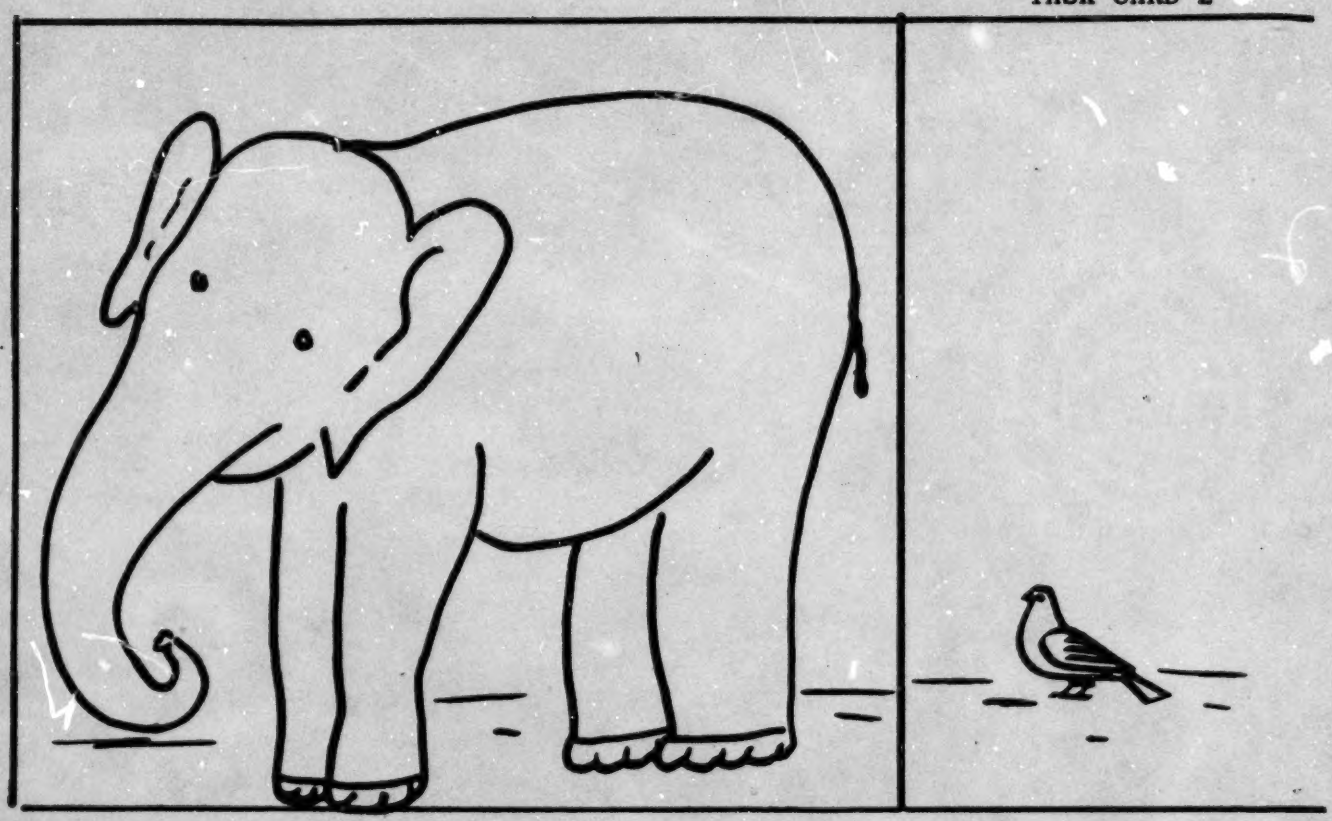
The leader will say to each child alternately:

"Please hold up your large square."

"Please hold up your small triangle."

"Please hold up your large rectangle."

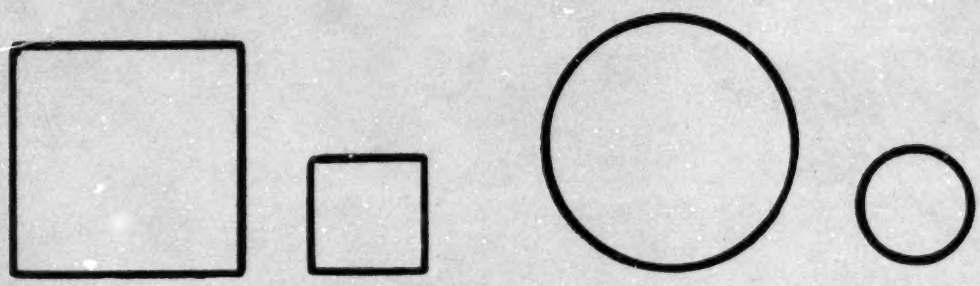
The leader, when the large and small shapes have been held up correctly proceeds with the game with color. She will say: "David, please hold up your green small triangle."

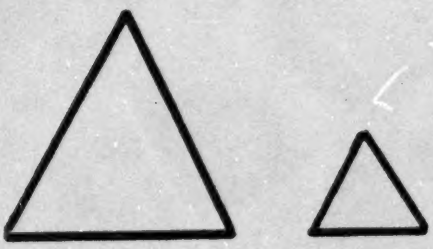


You need:

1. Paper folded in half.
2. Crayons.

On one side of the paper draw something large, and on the other side draw something small.





You need:

1. A large and small blue, and yellow triangle, square and circle for each child cut from construction paper.
2. Envelope for each child to put shapes in.
3. Leader.

The leader will say to each child alternately:

"Please hold up your big circle."

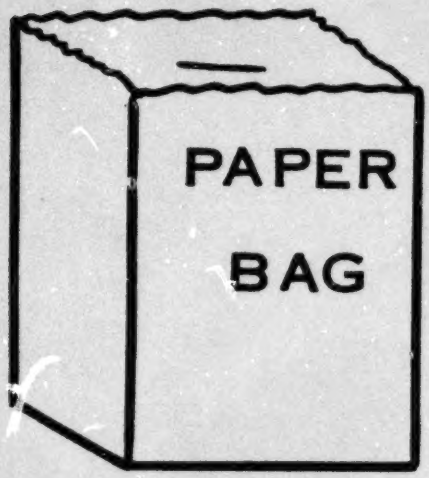
"Please hold up your little square."

"Please hold up your large triangle."

"Please hold up 2 shapes that are the same, but a different size. Hold up 2 other shapes that are the same but a different size."

The leader will proceed with color questioning, using the terms big-little, large-small, alike/same-different.

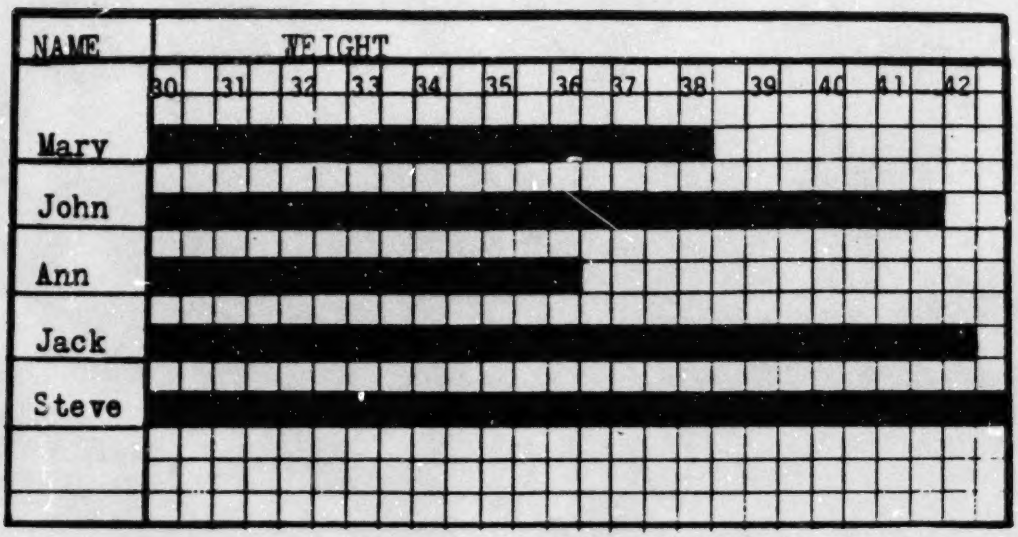
TASK CARD 4



You need:

Two sacks for each child.

Take a walk around the school with your paper sack. Find a heavy object for one sack and a light one for the other. Close your eyes, hold a sack in each hand, and try to hold the heavier one lower than the lighter one. You can pretend to be a balance scale. When you get back to the classroom, have your friends point to the heavier sack and the lighter sack. Take turns weighing the objects in the paper sacks.



You need:

1. Bathroom scales/or scales in nurse's office.
2. Someone to weigh you.
3. Graph paper.

Someone will weigh you and tell you how many pounds you weigh. You will have to remember! Your helper will graph your weight as you tell her.

Your helper will ask you:

"What do you call the measuring tool you were weighed on?"

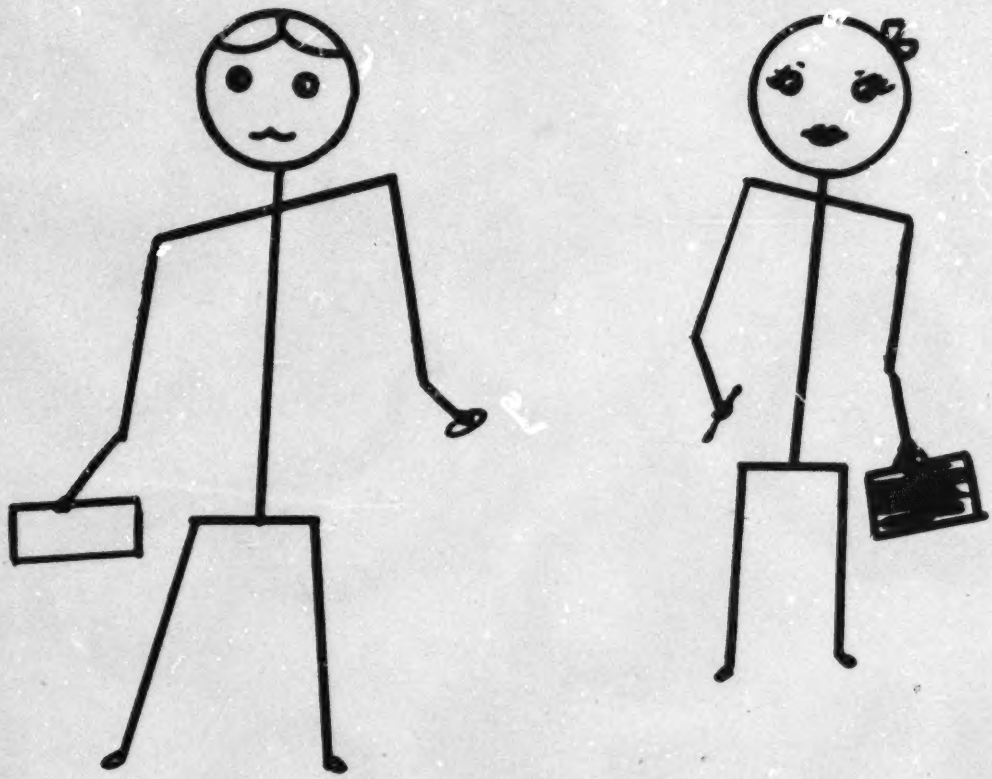
"Who is the heaviest?"

"Who is the lightest?"

"Who is the next heaviest?"

"Is anybody the same weight?"

"What two people weigh a different weight? Who is heaviest? Who is lightest?"



You need:

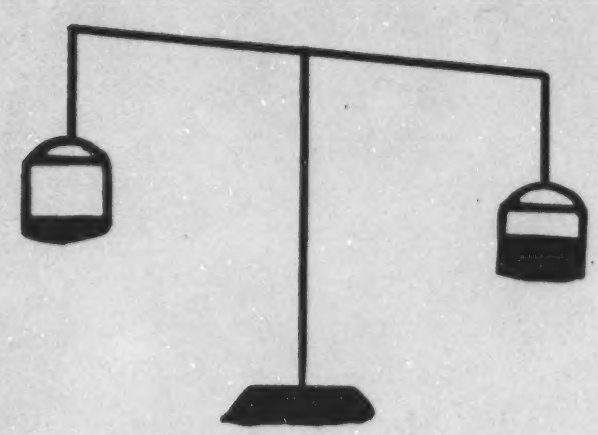
1. Collection of articles of different weights (e.g., marble - scissors; pencil - book; tissue - block; paper clip - chair.) Have some small objects heavier than large objects.

Take turns lifting the objects. Use your body as a balance, holding the heavier article lower than the lighter one. Tell in complete sentences which is heavier, and which is lighter. Discuss the fact as it comes up that not all large (big) objects always weigh more than small ones.

You need:

1. Story "Goldilocks and the Three Bears." Check with the school library.
2. Paper.
3. Crayons.
4. Scissors.

Ask the helper to read the story, "Goldilocks and the Three Bears." Discuss the size of the bear's bowls, chairs, beds. Then choose to draw either 3 bears, 3 bowls, 3 chairs or 3 beds. Make them small, middle size or large. Cut them out and order them from large to small.



You need:

1. Pan Balance.
2. Teacher collected objects. (See Task Card 8A for suggestions.)

LET'S MAKE THINGS BALANCE! LET'S SEE WHICH IS HEAVIER!

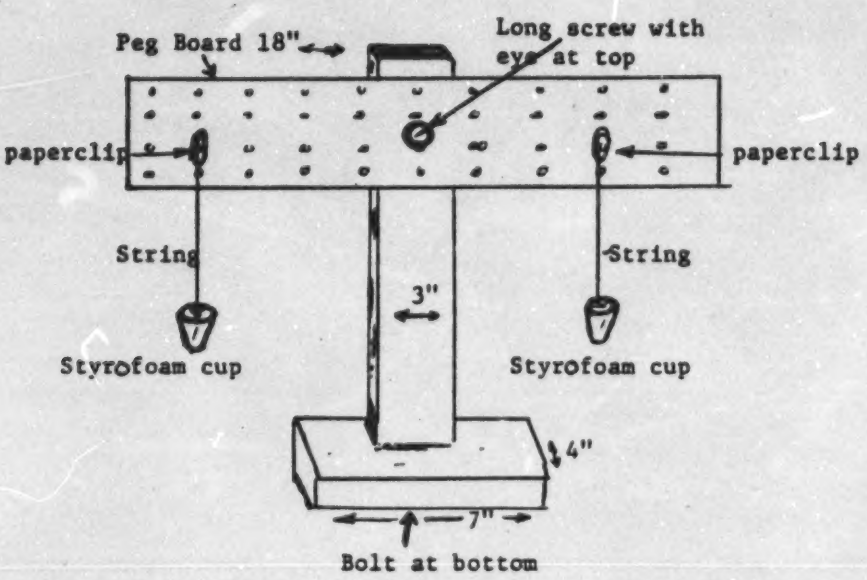
- Balance 2 pieces of clay.
- Balance paper clips, nails, buttons, etc.
- Put 2 marbles in one side, 3 marshmallows in the other. Which is heavier?
- Guess which is heavier, 3 screws, 3 beans. Measure them.
- Estimate which is heavier or lighter: 1 cookie or 1 marshmallow. Measure and see. Eat the heaviest.
- Measure many things to see which is the heaviest and lightest. Estimate them first. Count how many times you guessed right.

SUGGESTIONS FOR TEACHER COLLECTED ARTICLES FOR PAN BALANCE

You might like to put these in clear plastic glasses.

beans	cold cereal
beads	buttons
brads	macaroni
C-rods	marbles
popcorn	jelly beans
crackers	small marshmallows
cookies	nails
candy	screws
erasers	paper clips
pencils	clay

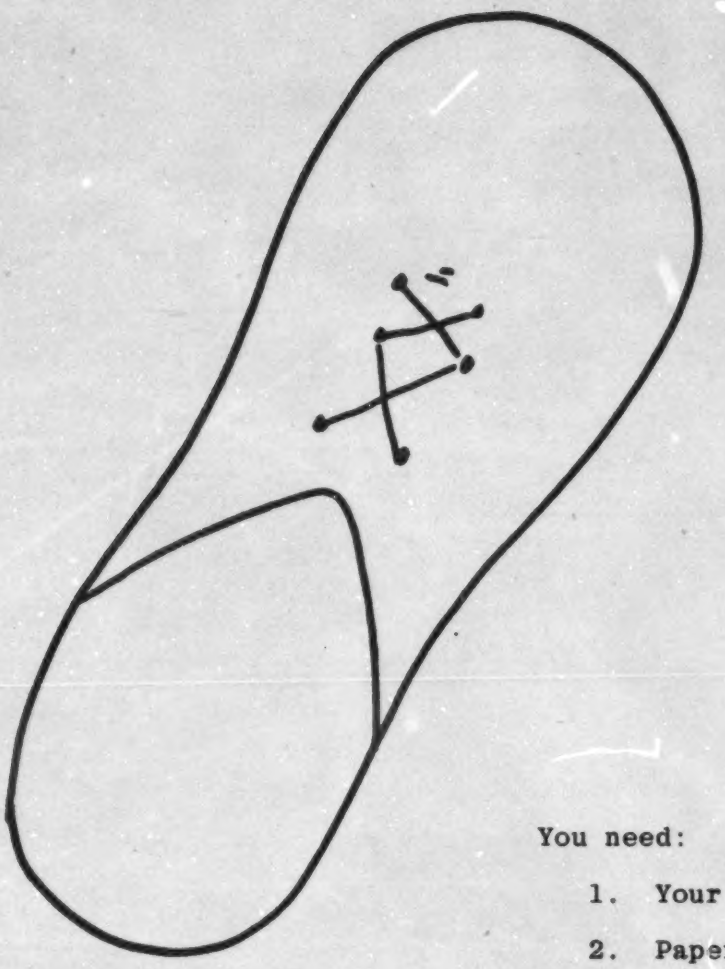
DIRECTIONS FOR PAN BALANCE



If you would like to make your own pan balance for your mathematics lab you will find it easy to make.

There is a pattern available:

Book: The Balance Book - A guide for teachers of primary balancing. Webster Division, McGraw-Hill. Page 105.

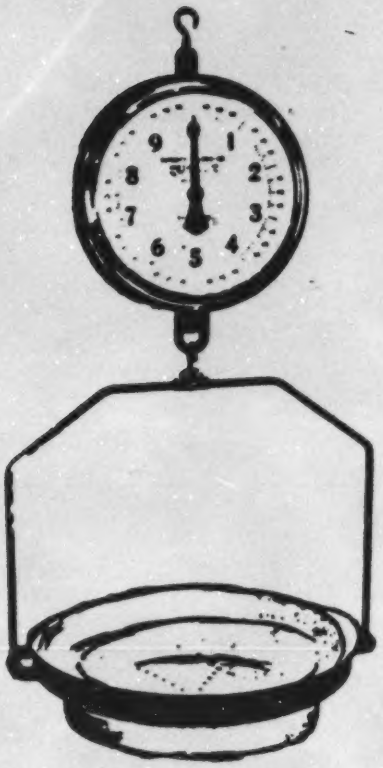


You need:

1. Your feet.
2. Paper.
3. Crayons.
4. Scissors.

Trace with a crayon one of your shoes. Cut it out. With your friends, put them in order from small to large.

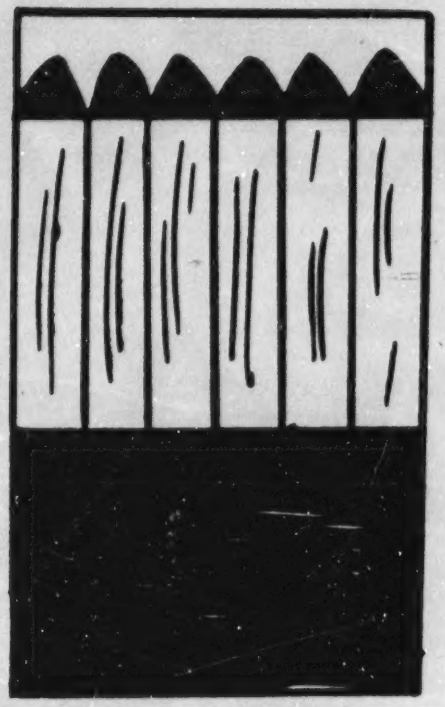
SCALES



You need:

1. Your eyes.
2. Your ears.
3. Your feet.
4. Your good manners.
5. Safety rules.

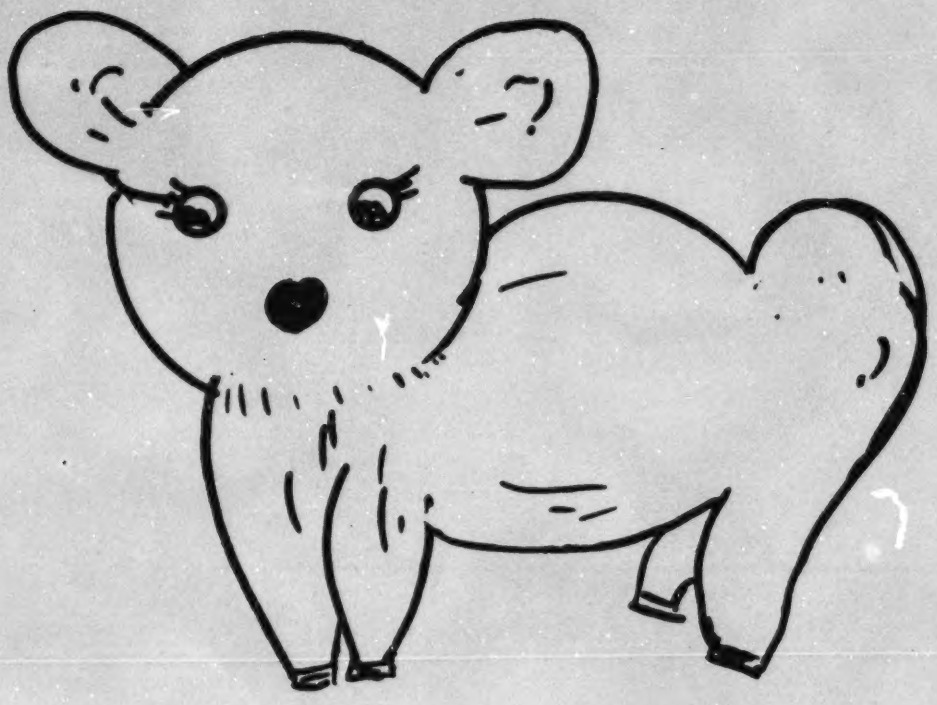
1. How many people do the measuring at one time?
2. Why is this job important?
3. Why is it important for him/her to read numbers?
4. What do you call the tool he/she used to measure with?
5. What did we see being measured?
6. Does the man who puts things in your bags have to know about weight? What?
7. Why is it important that we are able to know why things are heavy or light?



You need:

1. A crayon for each child.

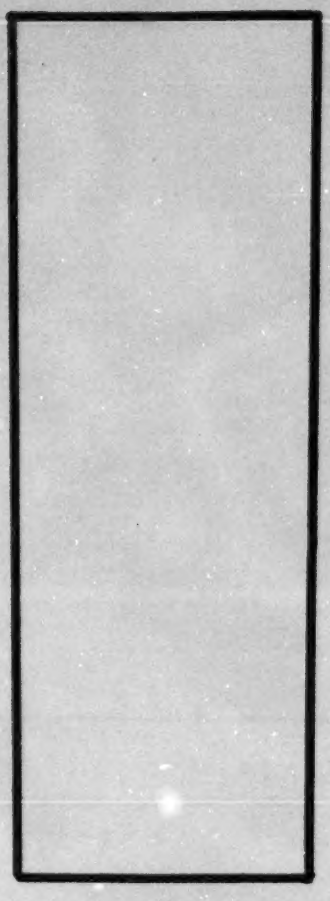
Hold your crayon and look around the room. Name as many objects as you can that are taller than your crayon. Go measure to make sure. Now, name objects that are shorter than your crayon. Measure to make sure.



You need:

1. Paper.
2. Paint.

Draw a picture of a mother animal and her baby. Tell your friends which one is tallest, and which one is the shortest.



LONG
TALL

SHORT

You need:

1. Newspaper.
2. Scissors.

Cut some long and some short strips of paper.
Make a group of long strips and a group of short strips.

You need:

1. Paper.
2. Crayons.

Draw a picture of your mother.

Draw a picture of yourself.

Tell your friends who is the tallest and shortest.

You need:

Your good thinking.

Think of "tricky" things to ask a friend.

Some good examples:

1. Which is longer a house or a mouse?
2. Which is shorter a bike or a trike?

Make up your own riddles to question your friends with.

You need:

Your hand.

Use your hand spread wide to measure:

1. a table
2. a book
3. a chair
4. a bookcase
5. the rug
6. the piano
7. the piano bench
8. the phonograph

Did they all come out even? Were some lengths a little more or less than your hand?

You need:

1. Straws, toothpicks, chalk, birthday candles.
2. A box.

Select from the box one of the tools to measure with.

Find six objects in the room. Measure them with your tool.

TASK CARD 18

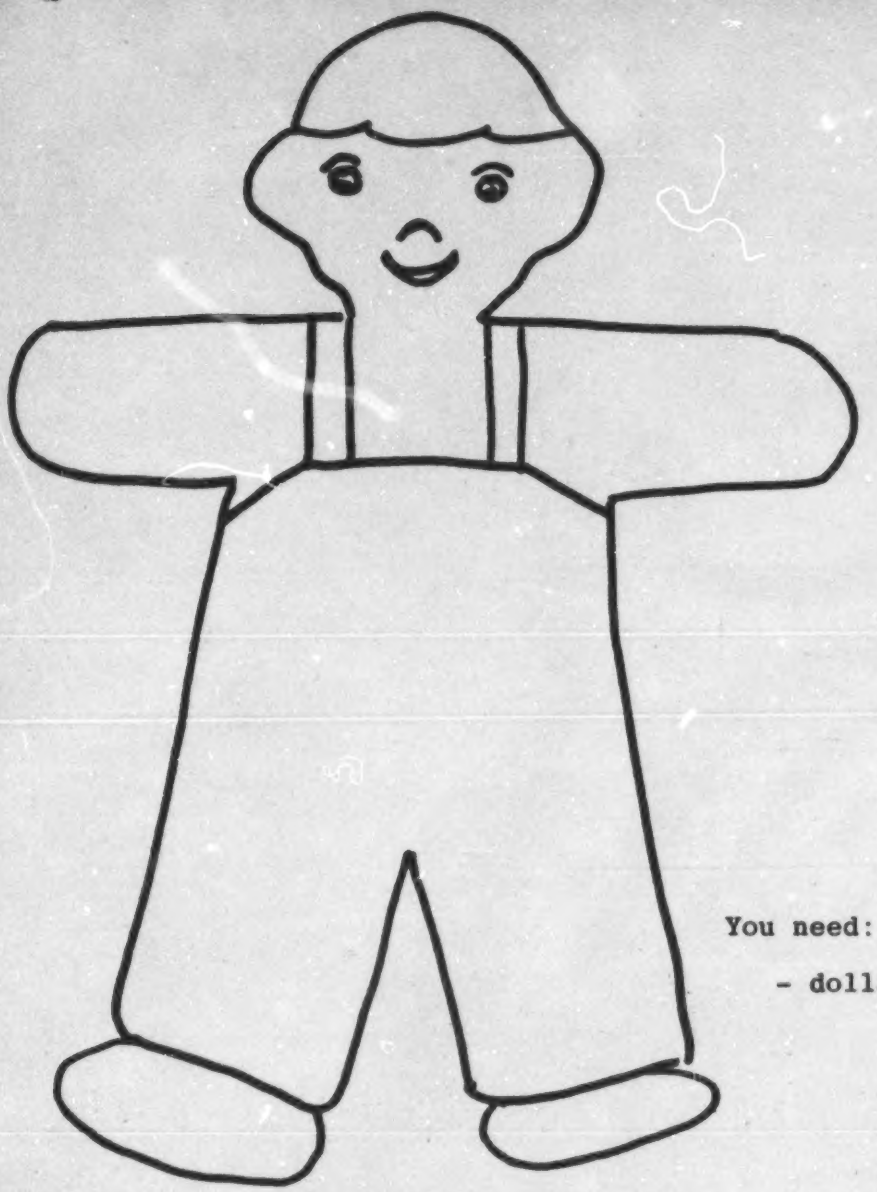
You need:

1. A long piece of butcher paper.
2. A helper.

Hang the butcher paper with scotch tape on the door. Stand very tall with your back to the paper. Let your helper mark how tall you are and write your name. When you are finished, compare the marks. Decide who is the tallest, shortest, the same, different, or inbetween.

40

TASK CARD 19

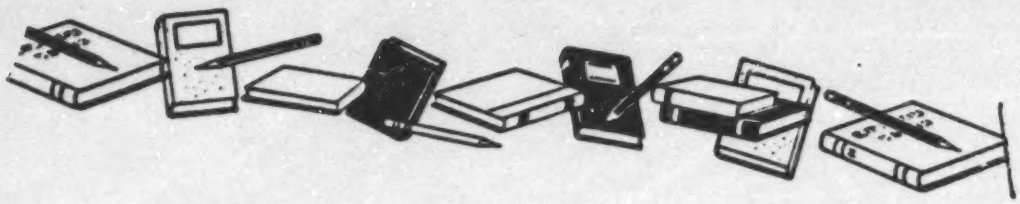


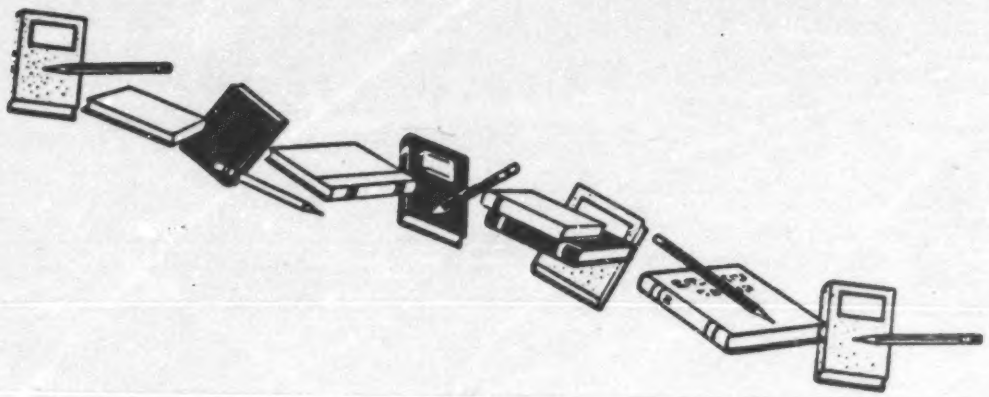
You need:

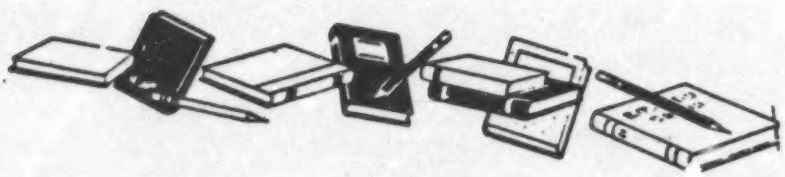
- dolls in a little house.

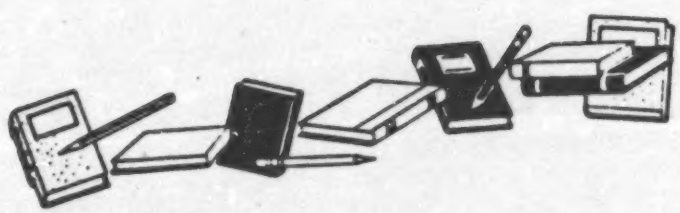
Take the dolls in the little house. Lay them down to see which is the longest. Stand them up to see which is the tallest and shortest.

TASK CARD 20









You need:

- books, games, pencils, blocks.

Find 3 books, games, pencils, blocks. Order them from short to tall or short to long.

12

You need:

1. Your good manners.
2. Your eyes.
3. Your ears.
4. Your feet.

Let's think about these things as we do our looking:

1. What do you call the tools that were used to do the measuring?
2. What did we see being measured?
3. In what way do you think numbers were used?
4. Why is this job important?
5. Why is it important to be able to measure in our daily work?
6. Why is it important for your mother to be able to measure?
7. Do you think the person who did the measuring had to practice measuring before he/she got the job? Why?